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I. What's In A Name?

Without question, the first public presentation, at Westercon 28, of U.F.O.-E.S.P.'s program seeking greater space activity on the part of the U.S. of A. was a resounding success. Seven new members were gained, hundreds more became indirectly aware of our intentions through our being listed in the calendar of events for the convention, while a score or more beyond the magnificent seven which joined were subjected to an intense explication of the organization's ideas. We must not blind ourselves to the effectiveness of our propaganda by thinking it can only be evaluated by tallying additions to the membership rolls; hence, we regard even intangibles such as being listed as an event of the convention as steps forward in our journey to the reaches 'twixt moon, planet and star. We are, in the first place, an idea and, consequently, all ideational avenues of experience represent ways which can be profitably explored. We advance on all fronts and the psychic one is most important.

However, it is not unimportant or insignificant that only seven of the thirty or so people who attended the presentation were moved to enlist in the cause. Though the percentage joining is anywhere from eighteen to twenty-five percent, it would not have been unexpected if a much higher proportion had joined given the nature of the forum. We are elated with the success we achieved on this first time; yet, we are not satisfied and so must speculate as to why more people did not make common cause with U.F.O.E.S.P. To some extent, we can attribute the results to the delegation's own lack of preparedness, arising from the surprise they all felt upon learning of the free publicity provided by the convention committee. To some other extent, however, we can attribute the outcome to the mental constructs, held by those not joining, associated with the organization's public 'face', if you will.

Given the nature of the topic (i.e., the spaceways and humanity's place in them), it is to be expected that many differing views will exist and that some will differ in such ways as to create argument. This argumentative situation arose and one point, which was frequently put forth, concerned the name of the organization or, rather, the acronym formed from same. It was said, "Don't you think that you won't be taken seriously because people will think you are mystics or quacks due to your initials being u, f, o, e, s, p?" It was said, "You'd better change your name. No one's going to go for U.F.O.E.S.P.!" It was said, "Aren't you afraid of being associated with flying saucers and psychic powers? Will Congress really listen?" Everyone was sincere, everyone was concerned. And everyone was wrong.

Time marches on and, as it does, reality's appearance to us changes. We observe, study and analyze the universe and our very activities alter its presentation to us. Time marches on and the explanations we have for existence and phenomena are transformed through time. This process has two characters: positive and negative. Some representations of reality become discarded with time while others become stronger and fuller in detail. One might think of phlogiston. One might think of relativity. One might think of Aristotle. One might think of Copernicus. Often there is a cyclic nature to our continuing understanding of the Universe so that it becomes difficult to determine whether or not reality is simply not completely fantastic. But we cannot avoid the conclusion that there does not exist an immutable order of ideas and that which is one day ridiculed, another day is praised.

In decades past, the subjects of the unidentified flying object and extra-sensory perception (commonly known as UFO and ESP) have aroused three distinct responses: blind acceptance, blind rejection and casual indifference. Numerous groups have been formed to propound each of the first two positions with great emotion on all sides. "They've landed!", "They'll never land!", "The mind reads!", "Impossible, telepathy!" are statements exclaimed on all fronts and compromise is not considered. Which do you choose, true or false? The evidence in all cases has been weighty; but is it fat or muscle, that is the question. No one knows and, for

the most part, no one wants to. It is simply a matter of acceptance or rejection out of hand.

Time marches on. And great changes in attitude have taken place with regard to these highly charged subjects. In truth, extrasensory perception and the unidentified flying object are now cause for serious study rather than polemics, though polemicists still abound in the fields most closely concerned with the topics. This change is most readily apparent with regards to ESP. Ed Mitchell flew to the Moon and returned transformed, returned with a new view of humanity. He left the space program and now dedicates his life to research and propaganda of the psychic potentials of mankind. The Los Angeles Times, in late July, printed a lengthy story, which began on the first page of the first section, on the new look of ESP. This article repeatedly informed the reader how ESP research was nearly respectable and how hard-core scientists such as physicists and biologists were directing attention to understanding the possibilities here. Thousands of people are now engaged in work in this field and respectable journals are beginning to publish articles on such research. As an example of this new state of regard, here is a quotation from Science News, July 12, 1975, Page 29 by Dietrick E. Thomsen: "Communication in physics means the transfer of energy or information by means of a bit of matter or energy traveling at a velocity no more than that of light. But it can't be done that way across [the] event horizon [of a black hole]. This communication has to be what physicists call spacelike, involving things like instantaneous translations in space, motions that take up no time, transfer of information without energy transfer . . . There are, in fact, people who propose spacelike phenomena to account for extrasensory perception . . ." It should be noted that not only has the first (probable) black hole been identified but that a second one has, as well. Time marches on.

When attention is turned to the question of the unidentified flying object, the first awareness is that this question has not gained in respectability with the passage of time to the same degree that ESP has. This may be due, in part, to the higher order of alien character associated with the UFO since, after all is said and done, ESP at least deals with humans and it is unlikely that the UFO does. In any event, though it is less respectable to take the question of UFOs seriously than to so regard ESP, increasing numbers of reputable persons are dedicating much energy to the problem. The July issue of Astronomy has two book reviews on two recent publications concerned with life beyond this world, sentient life on the order of our level at least at that. One, edited by R. Berendzen, is printed by the U.S. Government Printing Office and is entitled Life Beyond Earth and the Mind of Man, in which ". . . a collection of scientists, scholars and theologians spent a few hours describing their own ideas, questioning each other, and answering queries from the audience . . ." concerning ". . . the implications of intelligent life elsewhere in the universe, and the effects of contact with them upon human civilization . . ." The second review was focused on a book entitled Communication With Extraterrestrial Intelligence (CETI), edited by Carl Sagan (a noted astronomer). The review begins "Thirty years ago, most astronomers felt that any discussion of contacting life beyond Earth belonged in comic books. Since then the probability of contact with extraterrestrial life has become the subject of serious scientific research--thanks to advances in astrophysics and biochemistry. As confidence about life in space continues blossoming, they key question has now become: When will we contact alien civilizations?" (emphasis added). As a sign that this is not a passing fancy, the August, 1975, issue of the same magazine has another book review on the same subject. Entitled The Galactic Club: Intelligent Life In Outer Space, by R. Bracewell, the book is described as ". . . entertaining and thought provoking . . ." The review has two interesting sections. The first says "But . . . the author pulls back from the abyss and fails to even mention that some people think we are still being visited by spaceships from other planets. Presumably the author ignores UFOs because he doesn't have a clever explanation for them." The second states ". . . Bracewell does not talk about the

delayed radio echoes received in Europe a few decades ago which some analysts have decoded into a star map." This is not to mention such classic books as The UFO Experience: A Scientific Inquiry by J. Allen Hynek (chairman of the department of astronomy at Northwestern University), published in 1972 or Intelligent Life In The Universe, written by I.S. Shklovskii and Carl Sagan (copyright 1966). Clearly logical extrapolations from our own technological capabilities would also demonstrate the folly of thinking that UFOs in the stereotypic sense of alien spaceships are not possible. We may truly be alone but the idea that we are is not blindly accepted as in days gone by.

The relevance for the organization of these points is fairly straightforward. Since the topics of extrasensory perception and unidentified flying objects are becoming ones subjected to serious scientific scrutiny, we need not be fearful that our initials will be detrimental to our cause. U.F.O.E.S.P. represents, as an organization, the vision of the future, the future as concretely evolving, not the future as a fantastic dream. We might note, in this context, that it was with purpose that the organization was named as it was and a telling point for the name finally chosen was that its acronym would attract attention and would intrigue those people orientated in some way to the future. Those who find the name objectionable due to the resulting acronym are, in all likelihood, people who are dilettantes with regards to the scientific and technological developments occurring each day. Indeed, the millions who stand in need of an expanded space program will find (do find if we think of ourselves) the initials of United For Our Expanded Space Programs to be a potent symbol of what the Space Experience signifies (after all, space is a transcendent experience, to leave the planet does mean eventually to meet some Others in the Unknown). Learned persons calmly discuss mental telepathy and calmly discuss beings from other worlds; there is no need (or room) for embarrassment with our name.

II. Progress Is Our Most Important Product

The presentation at Westercon 28 was the first public effort of U.F.O.E.S.P. to seek membership and to educate the body politic as to the importance and necessity of expansion in America's space program. The advertisement which will appear in the programme book of the 33rd World Science-Fiction Convention is, in some sense, the second public effort towards those ends. In the months to come, as the first petitioning of Congress draws to a close, the third stage will begin--the Fall Media Campaign. Each of these projects represents an increase in exposure to the masses with the goal that of accustomizing ourselves to the rigors of public examination. There is a certain basic unpleasantness coupled with all this as often we will be forced to deal with ignorant, irrational, and purposelessly critical individuals and we will not as often be able to afford the luxury of properly putting these people 'in their place'. (Please, my friends, we must not balk at the terminology.) However, we cannot succeed unless we so engage our forces with the opposition since Congress will not be moved by the rationality and soundness of the Petitions alone. Just as we use our efforts to sway Congress to aid in the efforts to increase our membership, so we must use our public activities as support for our endeavors to change the minds of the space-policy makers. The task ahead is building the bases of mutual support along the three dimensions of membership and organizational structure, public propaganda and education, and direct lobbying of the power center.

What activities will comprise the Fall Media Campaign? Before the discussion gets under way on the technical details, it is first necessary to emphasize that the campaign is not viewed as completely formed or completely the responsibility of the Board of Governors. As we have said many times in previous issues, U.F.O.E.S.P. is an activist organization which seeks to generate as much effort as it can on the local level. It is our hope that the individual members and chambers will provide the Board with ideas and projects to mobilize the masses for space.

It goes without saying that we not only encourage collaboration between the Board and individual members or chambers but that we encourage heartily initiative on the part of the smaller units. The remarks to follow are only to be viewed as an outline of the campaign to come in the fall. The projects proposed are open to guidance or modification from everyone actively involved with the organization.

The Fall Media Campaign's start will be marked by the Fourth Petition's issuance which, in turn, will mark the close of the first petitioning of the people's representatives. This last petition of the first series will return to the economic question (the Third Petition will discuss the international implications of space exploration). At this time, it will focus on the philosophy of capitalism and the environmental consequences of the Industrial Revolution. The Fourth Petition will be sent, as will the Third, to the entire 94th Congress, the President, the Vice-President and the fifty governors of the United States. In addition, selected newspapers will receive the petition, with a covering letter, as a press release (does anyone know how this sort of thing is typically arranged?). Allied with this effort will be a modest letter-to-the-editor campaign directed at newspapers which might or might not receive the Fourth Petition. We cannot be certain what effects will occur and a great deal of our success will be dependent upon factors beyond our recognition and control. Nonetheless, given the salience to the general national predicament that our petition and covering letter will have, we should expect some movement in the media to discover, if not publicly present, us.

A second feature of the Fall Media Campaign will be the directing of organizational effort at another group (besides science-fiction enthusiasts) which holds some promise as one intrinsically inclined to regard the space program as worthwhile. At least two active members are enrolled at two institutions of higher learning. Since these institutions (New Mexico Institute of Mining and Technology, University of California at Santa Barbara) have strong departments in the natural sciences; since the atmosphere, as at any university or university level institute, is one characterized by rationality; and since our goal of an expanded space program is eminently reasonable; proselytizing efforts should be at least moderately successful. Campus 'sections' of U.F.O.E.S.P. can be formed, rallies can be held, broadsheets can be published, and, if the institution has a radio station, presentations over the airwaves can be broadcast, requiring only energy and time on our part as we are a non-profit organization. Everyone who is attending a university or college or technical institute should investigate the possibilities at their campus for organizing U.F.O.E.S.P. One should keep in mind the fact that the greatest part of student bodies in these places are under 24 and they, thus, have spent most of their lives in the space age. This is not to say that such people will automatically support space exploration and exploitation; however, they will not regard such future developments as lunar colonies, Mars missions and space habitats a la Gerard O'Neill as outrageous in conception or feasibility. There is nothing like the future and future lives are, perhaps, the most important resource of all.

United For Our Expanded Space Programs is marked by many things but the most distinctive is its pursuit of many lines of action at once. Each member, each construct of the organization is a thread to be woven in complicated ways with all others. Every action or project undertaken is a thread to be woven in intricate manners with all others. This is the deepest meaning to our claim that we advance on all fronts. The fabric of our group, the cloth of our actions, the woven design of our propaganda and education all insure that growth becomes the hallmark of our existence. As the FMC eventuates it is vital that the formalization of our structure proceed rapidly and harmoniously with it. There is no doubt that U.F.O.E.S.P. is a concrete entity; nonetheless it is not so in a sanctioned and formal way. For many months, the Board of Governors have pondered the edifice to be raised and laboriously taken timbers to frame it, outline it against time. But this work is not final, not only in the sense of much remaining to be done but also in the sense of modification permitted on what has been so far erected. As the FMC gets under

way, the completion of a formal charter must loom imminent on the temporal horizon. The work done to date can be found documented in previous issues of Morale Booster, particularly the April issue. It is felt by the Board that non-profit status is best for us because that status allows the group to avoid most, if not all, taxes. This does not mean that we cannot make money, and make large amounts of it at that. It only limits the channels into which the gains can flow. For the most part, the proceeds of our work must go into the organization itself, a foregone conclusion anyway, given the expenses associated with mobilizing millions of people. The first tentative deadline is October 29 for the completion of the rough draft of the charter. To prepare the final copy, to research the law again to check the congruency between the document and the statutes will necessitate the actual submission of the charter to the California Secretary of State to be towards the end of the year. Please be advised that the charter will be submitted to the active membership for approval (which requires 65% voting in favor). In any event, the benefits of all this legality are that we are removed from a tax limbo and that we will acquire, in the minds of the general public (particularly the informational media) a greater reality than one reflective of loose association. The rationality and pointedness of our positions, expressed in petitions, public forums, letters and whatever other communicative forms we decide to employ, will not alone insure that we will be taken seriously. Simple sanction from a governmental body will not insure this, either; but such recognition will increase enormously the determination and tenacity perceived by others to be possessed by us.

As always, the Board encourage, nay, beseech, the membership to communicate with them the reflections and insights and strategies they might have with respect to this, and all other, matters. The greater the interaction amongst ourselves, the greater the activities possible with the outside world. To your stations! Another advance begins!

III. Condiments

The Apollo-Soyuz Test Project provided much entertainment and relief from the dismal world-social reality to those, such as ourselves, who have a greater vision of the future than political conflict. No matter what one's feelings might be over the public relations aspects of the mission, there was nothing but inspiration to be drawn from the rockets blasting off the pads at Cape Canaveral and Tyuratam, the delicate maneuvers of the spacecraft to establish proper orbits, the final docking and exchanges of crews. As minor as this mission appears compared to the dreams we emphasize will come in the next two decades, it nonetheless embodied, in spirit, what the Space Experience is all about. For whether one travels to the Moon, to Titan, to Mars, or to simple earth orbit, one moves to a completely alien environment and it is the alienness which creates the transcendence. Yes, to watch on television the mission unfold was thrilling but it also had moments intriguing for the organization in its efforts to mobilize the masses for space. On the Today Show, Werner von Braun appeared briefly and one of his first remarks, in reply to Peter Jennings' comments on the layoffs at Cape Canaveral that week, was that just that very day a new organization had been launched by him and some colleagues called the National Space Institute which was created for the purpose of educating the country as to the benefits of space. It was fascinating to listen one morning to AM America and to hear Stewart Brand, editor of the various editions of Whole Earth Catalogue (and Epilogue), say forcefully that space indeed had relevance for the planet and that a forthcoming issue of his new magazine Co-Evolution Quarterly was going to focus on the space habitats of Gerard O'Neill, which have been discussed in previous issues of Morale Booster (begin your research with "Voices From The Outside World"). And there was a certain superstitious pleasure in telephoning the Post Office in San Diego two days after the first-sale date and learning that the commemorative stamp honoring Apollo-Soyuz had been sold out, reputedly all over the city. We did not monitor completely the telecasts related to the mission, but

even if these were the only examples, which we doubt, of the growing movement towards space, of the vast numbers receptive to an expanded space program, we should take heart in our methodical tasks. We are not alone and this thought, more than any other, should guide our actions and be in the forefront of our minds.

This column serves two basic purposes. One is to bring to the membership's awareness items such as the above which might be termed 'spacy tidbits from the world-social-reality'. The second is to bring to the members' attention innovative ways in which they may be useful in our many projects to raise the consciousness of the American people. This month we would like to mention briefly the need U.F.O.-E.S.P. has for inexpensive ways to print our literature. Rather than seek to own all the means of production, the Board feel that it is better conservation of resources to seek access to the necessary equipment. The question, simply, is does anyone out there in Morale Booster Land have access to reproductive apparatus such as offset, xerox, mimeograph or ditto? It is probably unnecessary to clarify the question by adding that the access is thought of being (substantially) cheaper than what is available on the open market but let us be cautious and state the obvious anyway. The two biggest expenses that U.F.O.E.S.P. has are postage (about which we can do little since stamps cost the same no matter where you buy them and we are not about to engage in counterfeiting!) and printing. Each petition's printing amounts to thirty or more dollars while each copy of an issue of Morale Booster, which we have (until recently) been able to print at essentially nothing, costs thirty to fifty cents. This is not the time or place to discuss all the sordid financial aspects of our activities (tune in next issue with the lead article); we cannot, however, ignore these realities and so any manner in which we may lessen their impact bears examination. Access, access is what we desire. All stray printing presses report immediately to the national office!

IV. Voices From The Outside World

"In the not too distant future, crews of orbital spaceships and interplanetary craft will be able to add fried chicken, chicken soup, and fried eggs to their menus. A space poultry farm has been designed by Soviet engineers. Twenty-three chickens will be housed in the orbital module, and 12 chicks will be kept in a special compartment. Everything to ensure normal activity and growth has been provided at this poultry farm." Soviet Life, Page 52, June, 1975 (emphasis added).

"Revised Air Force plans for military operations of the space shuttle all but eliminate Edwards Air Force Base in the Mojave Desert as a landing site and propose Vandenberg AFB near Lompoc for both launch and recovery of the reusable orbiter. The new plan envisions use of existing facilities at Vandenberg and estimates an overall cost of about \$656 million to bring the Air Force shuttle into full operation at the base late in 1982. The Air Force estimates more than \$50 million will be saved under the new plan. Original Air Force planning called for vertical launches and polar orbit missions out of Vandenberg, with conventional landings at Edwards and piggyback airlift of the shuttle to Vandenberg atop a modified 747 jumbo jet. Under the new concept, which has not yet been presented to the Defense Department or Congress for approval, Edwards would serve only as a backup landing site, together with Hawaii and Guam. The desert base would still be used for first glide tests of the shuttlecraft in air launches from the jumbo jet in 1977, however, and for landings on the first four orbital tests out of Cape Canaveral in 1979 by the National Aeronautics and Space Administration. NASA is developing America's Space Transportation System to meet both its own needs and those of the military. The space agency is expected to undertake regular shuttle missions out of the Kennedy Space Center at the cape beginning early in 1980, with landings also at Kennedy. It is estimated NASA's operations on the civil side will reach a maximum of about 40% in the 1980s, with the Air Force launching about half this number of missions annually at peak. While most of the space agency's flights will be

launched from Kennedy and the majority of military missions will fly from Vandenberg, the two sites will be used interchangeably . . ." The Los Angeles Times, Part II, Page 1, May 30, 1975. by Marvin Miles (emphasis added).

"A proposed cut of \$48 million from the budget of the scheduled 1978 Pioneer probe of Venus has been opposed by Sen. John Tunney. Tunney called for restoration of the money after he toured NASA's Ames Research Center (in Mountain View, California) yesterday. Tunney and project director Dr. Larry Collins said if the House of Representatives plan goes through, it would be tantamount to killing the project. The House proposal calls for reducing the project funds from \$57 million to \$9 million. The Senator said the prospect of a world population of 8 billion people by the turn of the century demands the unlocking of mysteries of climate to avoid starvation and food wars. Collins said that Venus serves as a remarkable laboratory with which to study climate since it is a much 'simpler' planet than earth. 'The project has the full backing of the scientific community,' Collins said." The San Francisco Examiner, Page 5, July 2, 1975.

"When the Apollo spacecraft lands in the Pacific, American space scientists will have closed a long and glorious chapter in U.S. space exploration. Apollo has reached its limits on moon flights, visits to space stations and now independent orbital flight. The next five years for the United States will be spent developing the revolutionary new type of reusable spacecraft called the 'space shuttle'. During the rest of the 1970s, only Russian space pilots will be in orbit. The Soviet Union will complete its most successful space mission in 15 years when the Soyuz-18 crew concludes its 60-day Salyut-4 mission with a return expected a few days after another Soyuz crew returns from its rendezvous with the U.S. Apollo. . . . Soyuz space capsules and Salyut orbital laboratories still have a lot of capability left in them, and the Soviet Union has now cleared the way for an ambitious and far-reaching program of space flight. Soviet activity of more than five . . . manned flights a year will be in marked contrast to apparent American space inactivity. The Russians will have space all to themselves for at least half a decade. What will they be doing with this monopoly? While the corps of American astronauts is dwindling to less than 25 pilots . . . a Soviet escadrille of 50 to 70 men will double by 1980. New apartments and training centers are being built at the Soviet cosmonaut town called 'Star City' . . . Young pilots and older scientists are being recruited for new space missions which will probably outstrip most previous American accomplishments . . . The primary effort will be observation of earth from space. These surveys will include monitoring of agricultural, mineral and water resources, meteorology, and military reconnaissance. There will be a secondary emphasis on sciences such as biology, physics and astronomy. There will be engineering test flights to perfect new capabilities needed to complete these missions. These will involve improved models of spacecraft . . . , new rendezvous control systems, and extravehicular activity. Other engineering experiments will entail the new field of space manufacturing, where the unique characteristics of space such as weightlessness and vacuum are utilized to create special products unavailable or prohibitively expensive on earth. . . . By the end of the decade, Salyut space stations will also be sent into lunar orbit, and more advanced modules could form the core of the planned Soviet interplanetary manned spacecraft of the 1980s . . . the Russians already have capability to send men out to and around the moon, and they are almost certainly planning such . . . flights before the end of the decade. Beyond that, there are still no new signs of advanced development of a lunar module necessary to actually land men on the moon's surface. . . . Another point repeatedly stressed by Soviet space specialists . . . is the importance of onboard regeneration of air, water and food. Salyut-4 tested a new Soviet device which reprocessed water from cabin humidity and cosmonaut urine. Special high-protein plants and vegetables for space food have been tested on earth and in actual space missions. Such activity is another indication of Moscow's high

interest in very long duration manned space missions either in a lunar colony or on the way to Mars . . . Many Soviet flights will be devoted to achieving levels of competence which the United States has already shown and surpassed. Other flights will be collecting data which American scientists are already studying . . . But many other Soviet space efforts involve revolutionary new developments with great potential . . . Faced with the pause in American activity, Moscow could well regain the lead in some fields of space exploration and exploitation. In areas such as space manufacturing, space astronomy and space biology, Soviet scientists apparently have mapped out an ambitious five-year plan while their American colleagues are grounded." The Los Angeles Times, Part V, Pages 1 and 4, July 20, 1975, by James E. Oberg (emphasis added).

"Japan has signed a \$47 million contract with the United States under which three Japanese satellites will be launched in 1977 and 1978 from Cape Canaveral." The Los Angeles Times, Part I, Page 12, July 22, 1975 from AP.

"The American Apollo and the Soviet Soyuz spacecraft have joined 3,454 other man-made objects in orbit around the earth. Technicians at the North American Air Defense Command [at Colorado Springs] said Tuesday that the chances of any of the objects colliding with the Apollo or Soyuz were about one in a billion. NORAD technicians track all objects in space. As of the first of the month, they reported, there were 3,454 such objects, most of them put there by the United States or the Soviet Union." The Los Angeles Times, Part I, Page 19, July 16, 1975 from Reuters.

"Dr. Ignaz Semmelweis, a Hungarian pioneer in antiseptics techniques, held a theory that was once considered most peculiar: if hospital attendants would clean their hands after working on cadavers and before performing obstetrical work, infant mortality would be greatly reduced. Semmelweis' insistence on cleanliness in the 19th century led to public and professional ridicule that drove him from Vienna and into insanity. It was not until 25 years after his death that the significance of his work was fully recognized. And so, most likely, will it be with America's manned exploration of outer space--an era of incredible technical advances that is to end Thursday when the last Apollo flight crew splashes down near Hawaii. The full significance of that era may not be known for years. But already a spin-off of commercial products--ranging from \$19.95 pocket calculators to improved pacemakers for heart patients--has resulted from technical advances originally intended solely to solve space needs. 'Even if we turned off the spigot right now,' said John Wheeler Jr., a NASA official involved with transferring space-age knowledge to commercial utilizations, 'the technology benefits that are being absorbed by industry and the public would continue to accrue for years and years.' Ballpoint pens that write in any position, miniature tape recorders, wheelchairs that quadriplegics can control with voice commands, instant reservations and computer systems all had their origin in space-age research. In its race to the moon, the United States wanted a lot of answers fast, and it was willing to pay for them. And just as the principal characters in 'The Three Princes of Serendip' found more valuable discoveries than the treasure they had set out to look for, the United States has more than moon rockets to show for its space exploration: --A pacemaker, which uses a rechargeable battery rather than nuclear-generated power, utilizes many electronic and electrical components first developed for NASA space craft. It is made of extremely durable components and is safe from electrical interference from sources like radar and microwave ovens. It is one-third the size and one-half the weight of conventional pacemakers. --A remote monitoring system, perfected in the space program, automatically measures air pollutants and handles data reduction and interpretation. It is being used in New York City. --As a result of the fire that killed three astronauts in 1967, an efficient fire retardant for use in draperies, clothing, bedding and paint has been developed.

It could reduce the number of victims (12,000 in 1970) killed in preventable fires. --Semiconductors, hardly bigger than a pinhead, containing 1,000 circuits came from space research, as did dry, spray-on electrode techniques permitting the taking of electrocardiograms even on bumpy ambulance rides and tiny sensors that can be inserted into veins to measure blood without interfering with circulation. The lunar program probably produced the greatest accumulation of technical advances ever made in a single peacetime mission. At the peak of the space program, 420,000 persons and 20,000 companies were involved with the effort. Of all the funds allocated for space--something well in excess of \$30 billion--92% has been spent in the United States, General Electric says. One of the greatest contributions of space research has been communications satellites. In 1960, live TV could not be sent across the Atlantic. By 1965, it was possible but expensive. By 1969, the cost had been reduced to one-fifth of the 1965 rate and the largest audience in history--over half a billion people--watched man's first steps on the moon. The automatic picture-taking systems on U.S. weather satellites--the backbone of weather reports on the 6 o'clock TV news--are shared by 50 countries. Tiros III gave advance warning on Hurricane Carla, enabling 350,000 persons near the Gulf Coast to move from the path of the storm. The National Research Council of the National Academy of Sciences estimates that accurate long-range weather forecasts, which may be possible in the foreseeable future, would save \$70 million annually in flood and storm damage." The Los Angeles Times, Part I, Page 13, July 21, 1975 by David Lamb.

"The glamor and romance of space travel still permeate the atmosphere [at Cape Canaveral] but they are wearing a little thin. They must vie for attention with one grim reality: about a thousand workers at the Kennedy Space Center will lose their jobs soon. The days of wine and roses are over and Cape Canaveral is becoming more of a retirement center than a space center. Weeds are growing in the sidewalk cracks. Within the next few days, after the successful launching Tuesday of the Apollo spacecraft and the Saturn rocket, many of the workers who did so much to achieve that success will be leaving their jobs. There are plans to make Cape Canaveral 'the gold center of the country' according to some local officials. The space workers have known for almost a year that they would be losing their jobs, because the nation is phasing out the Apollo aspects of its space exploration program. It is one of the ironic twists to this mission. For it is now the Soviet Union that is increasing its space program and has a number of manned missions scheduled. The United States has none. There will be the space shuttle, but that will not become operational until the end of the 1970s. It will be a long time before there is anything again resembling the incredible moon voyages that the United States carried out with the Apollo spacecraft and the Saturn rocket. The days of big space budgets, plenty of \$20,000 salaries, lots of sports cars and long, long hours of work are over. But the shot Tuesday did bring out some big crowds. The Chamber of Commerce put out its usual estimate of 1 million. Police said there were closer to 300,000 in the area. Ramon's Bar, one of the favorite watering holes for locals and visitors, celebrated the Russian-U.S. mission by using only Soviet-imported vodka in its Bloody Marys. The Apollo spacecraft is being put away, never to be used again. The Soviet Soyuz spaceship is not its equal in size, comfort, weight or sophistication. But as astronaut Thomas P. Stafford said not long ago of the Soyuz: 'They can build it very cheaply. They can test it and check it out very cheaply. They can turn 'em out like hotcakes.'..." The Los Angeles Times, Part I, Page 22, July 16, 1975, by Nicholas C. Chriss.

"Twin boys born in Soviet Kirghizia in central Asia were named Apollo and Soyuz, Tass reported Friday. The news agency said the twins' father, Seidymkan Satyvaddiev, worked in a plant processing semi-precious stones." The Los Angeles Times, Part I, Page 20, July 19, 1975 from AP.

V. Some Economic Notes: Our Money, Their Space Program--Part Four

In order to make greatest use of the economic reasons supporting a large increase in this country's space efforts, it is necessary to understand all aspects of the reasoning from the most obvious to the most subtle. To say that the economic arguments for expansion in space activities are the strongest ones is not to say that they are equally obvious. To say that the economic benefits of enormously increased space endeavors are nearly too numerous to mention is not to say that they are equally homogeneous in their nature. The second installment of this article attempted to single out some of the obvious, direct benefits to the random individual of space exploration and exploitation. The third installment attempted to address some of the more subtle questions associated with the economic possibilities of an expanded space program. This last portion seeks to elucidate some of the more fundamental 'attributes', if you will, of increased use of the space environment. To argue the economic value of the space program most effectively, it is necessary to have numerous fallback positions (since everyone in the opposition will have particular idiosyncrasies and will, out of hand, not allow certain aspects as valid for consideration) covering as many conceivable approaches as possible.

The dominant fact of the 1970s, and after, for the world-social-reality is the rising demand of the planet's populations for economic betterment comparable to the Western Industrial World. The British factories of the late eighteenth century and the Stalinist Revolution of the 1930s and 1940s have demonstrated to humanity that the road to drastically improved living standards for the masses is the highway of industrialization. There is much argument as to whether a capitalistic or socialistic or communistic path is the least arduous one; there is much argument as to the fundamental value of so raising the planet's populations' (witness Cambodia and, to a much lesser extent, China) living standards; there is little, if any argument that industrialization is the path necessary for achieving this end. The political unrest, the military conflicts, the social upheavals we are witnessing all over the planet (be it Argentina, Angola, the Middle East, Portugal or scores of other places) are due, for the most part, to the increasingly determined demands of people for materially richer lives. Automobiles, television sets, meat, shoes, houses, radios, furniture, dental work, liquor, books, records, bicycles, shirts, trousers, appliances, classrooms, airplanes, candy, sports equipment, and thousands of other things, in larger numbers, greater variety and decreasing cost, are the goals of the random individual today no matter where he, she or it lives. Industrialization is the answer for humanity, not because it is the only method to gain these artifacts necessarily, but because the Stalinist Revolution is too near a vision for the underdeveloped world and the British factories are too far a vision for the developed one.

However, there is a price for the industrial journey. As humanity studies the machinery of life and industrialization in greater detail, they become aware of an inevitable consequence of economies geared to produce the high living standards expected by the masses: the destruction of the environment is unavoidable with industrialization of the level necessary to satisfy the planet's people, given the sheer number of people the planet possesses. Pollution, which has only recently been a subject for intense study by economists, cannot be avoided because the processes of industrialization are, in the greatest part, completely unnatural. Industrialization is not a biologically evolved product in the world; it is an imposition upon it by one species which already has passed beyond biological to cultural evolution. Therefore, the environment is simply overwhelmed by the effects of industrialization because it has no mechanisms evolved to integrate them. The environment, that is to say, the biosphere, degrades, that is to say, decays.

There is much discussion as to whether a capitalistic or socialistic or communistic mode is the best one for ordering industrialization but, for our purposes, the argument is an irrelevant one. No matter the definition employed or preferred, the United States of America is a capitalist society as well as being the primary

space power, the rapid development in this area of the Union of Soviet Socialist Republics notwithstanding. For capitalism, the motive force for industrialization is continual economic growth. It may, indeed, be the motive force for industrialization of whatever mode. The July 14, 1975 issue of Time had as its cover story "Can Capitalism Survive?" and two succinct quotes from that article express this fact perfectly. The first: "... economic growth ... is one of capitalism's main justifications for existence." The second: "Capitalism's whole spirit is growth ...". One might add that the necessity for economic growth exists in all the modes of industrialization because there are continually more people and they have continually increasing demands.

It is clear that there must be a crisis point, a crunchpoint, so to speak, at some time between the necessity for growth and the inevitable consequence of that growth. There are many today who feel that society has reached that crunchpoint and this is not the place to argue with them. Rather, it is the place to point to an exit from the predicament, whether the predicament is here or is about to pass. Although destruction of the biosphere is an inevitable result of planetary industrialization, it is not the only result possible in every circumstance. Earth teems with life and so we, who are alive, tend to focus on that attribute of the Phenomenological Universe as if it were the only significant one. Bound to the planet, it naturally is. But the greatest meaning of the Space Revolution is that we are no longer bound to the planet. As space has been explored by machinery and men, it has become increasingly noteworthy that the life that teems here does not teem there. For most people, this is depressing and a powerful argument for leaving space alone, for not directing much attention or energy or time to it. The very barrenness of space however possesses an enormous benefit: there is no biosphere to destroy. All the odious industrial processes, if transferred to outer space, would be odious no longer. No rivers would be polluted; no forests or plains would be ravaged; no oceans would be poisoned; no wildernesses would be trampled or fouled. One might surely affect the space environment; but it would be difficult to harm it.

Naturally, all industrial processes cannot be transferred to outer space at this time, if ever. It must be remembered in this context though, that it is probably not necessary to transfer all the processes to outer space since the environment is adaptive and can integrate a limited number of polluting effects. Furthermore, the research on space manufacture of ball bearings, computer components, and vacuum-welded materials clearly indicates that there is enormous promise in alleviating industrialization's environmental consequences through the manufacture of many of its products off the planet. In truth, space offers the best of all economic worlds: continually growing conspicuous consumption without enormous pollution. It seems too good to be true and perhaps it is. But the environmental crisis, revolution of rising expectations, and direct economic benefits known today from space activity all call for expansion in America's space works, if only as an experiment to discover a solution to the crunchpoint, coming or upon us, of industrialization.

A short quote to bring us full circle to the beginning of this article three issues back is offered now. The four installments have discussed the economic reasoning from many perspectives but they all come down to one thing: money and the Federal Budget.

"The Ford Administration is reviewing the nation's \$134 billion array of social welfare programs with the idea of reforming some of them [and] dropping others ... These programs, all arising from the New Deal social legislation of the late 1930s, now make up more than one-third of the total federal budget ... [For example] Food stamps, which cost the government \$248 million in 1969, will total an estimated \$7 billion next year ... there is little evidence that food stamps have improved the nutritional side of the diet of anyone except the poorest

recipients--people who couldn't afford to buy any food at all . . ." The Los Angeles Times, Part VIII, Page 6, August 17, 1975 by Stuart Auerbach (emphasis added).

-----The Board of Governors of
U.F.O.E.S.P.